Remarks

Entry of the above-noted amendments, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claims 1-8, 11, and 13-23 are amended and claims 24-25 are added. These amendments to the claims constitute a bona fide attempt by applicant to advance prosecution of the application and obtain allowance of certain claims, and are in no way meant to acquiesce to the substance of the rejections. Support for the amendments can be found throughout the specification (e.g., page 3, lines 13-20; page 5, line 24 to page 6, line 15), figures (e.g., FIGS. 1-2), and claims. Claims 1-5, 7-16, and 18-25 are pending.

Claim Objections

Claims 11 and 12 were objected to because of insufficient antecedent basis. The amendments to the original claims presented herewith address this objection.

Withdrawal of the objection to claims 11 and 12 is therefore respectfully requested.

Claim Rejections - 35 U.S.C. § 112

Claims 2 and 6 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Office Action suggests that the claim language indicates a perfect filter. The Office Action also alleges that claims 2 and 6 contain enigmatic wording. The claims 2 and 6 as amended are believed to overcome the rejection under 35 U.S.C. 112, first paragraph. The applicant believes that the amended claims 2 and 6 are enabled in view of the language of the specification and do not contain enigmatic wording as asserted by the Examiner.

Applicant respectfully submits that the claimed "wavelength attenuation range" is a range at which the long period Bragg grating is capable of attenuating. The claims presented herewith do not require perfect attenuation within that range. As presented in currently amended Claim 6, the first core couples a subset of the one or more first output signals to the first cladding to attenuate the one or more first output signals.

The Office Action alleges that claims 1-23 are confusing due to the recitation of "one or more of the one or more." This rejection is moot in view of the amendments to the claims presented herewith.

Withdrawal of the § 112 rejections is therefore respectfully requested.

Claim Rejections - 35 U.S.C. §§ 102 and 103

Claims 1-3 are rejected under 35 U.S.C. § 102(b) as being anticipated by Vengsarkar (U.S. Patent No. 5,430,817). Claims 1, 4-15, and 17-23 are rejected under 35 U.S.C. § 102(b) as being anticipated by Michal et al. (U.S. Patent No. 6,025,915; "Michal"). Claim 16 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Michal in view of Goldberg et al. (U.S. Patent Application No. 20020094159; "Goldberg"). These rejections are respectfully, but most strenuously, traversed.

It is well-settled that there is no anticipation unless (1) all the same elements are (2) found in exactly the same situation and (3) are united in the same way to (4) perform the identical function. Since the Office Action's citations to each of the applied references are missing at least one element of each of applicant's independent claims, applicant respectfully submits that the claimed invention is not anticipated by the Office Action's citations to the applied references, as further discussed below.

Applicant respectfully submits that the Office Action's citations to the applied references, with or without modification or combination, assuming, *arguendo*, that the modification or combination of the Office Action's citations to the applied references is proper, do not teach or suggest one or more elements of the claimed invention, as further discussed below.

For explanatory purposes, applicant discusses herein one or more differences between the Office Action's citations to the applied reference and the claimed invention with reference to one or more parts of the applied reference. This discussion, however, is in no way meant to acquiesce in any characterization that one or more parts of the Office Action's citations to the applied reference correspond to the claimed invention.

Applicant respectfully submits that the Office Action's citations to the applied reference does not teach or suggest one or more elements of the claimed invention. A careful reading of the Office Action's citations to the applied reference fails to teach or suggest, for example, the long period Bragg grating that is optically coupled with the light source via the first optical splice and the amplification fiber that is optically coupled with the long period Bragg grating via the second optical splice, wherein the long period Bragg grating attenuates the output signal, as recited in applicant's independent claim 1.

Vengsarkar (column 3, lines 22-47; FIG. 5) discloses a long period spectral shaping device to remove unused pump energy:

> FIG. 5 illustrates an optical transmission system 50 using a long period spectral shaping device to remove unused pump energy. Specifically, the system 50 comprises a transmitter source 51 of optical signals such as a digitally modulated 1.55 μm signal, an optical signal path comprising a length of optical fiber 52 for transmitting the signal, and a receiver 53 for receiving and demodulating the signal. An optical amplifier such as an erbium-doped fiber amplifier 54 is disposed in the optical signal path for amplifying the transmitted signal. The amplifier is pumped by pump sources 55, 56 of optical energy of pump wavelengths λp_1

> and λp_2. Unused pump energy of each pump wavelength will pass through amplifier 54. The energy is advantageously removed from the system so that it will not deteriorate the performance of the pump sources 55, 56 and transmission and receiving equipment 51, 53. To remove unused pump energy, a long period spectral shaping device 57 is disposed in the path of the energy from pump 55 after it has passed through amplifier 54. Specifically, in the dual-pumped laser of FIG. 5, device 57 has its spacing Λ chosen to remove energy of wavelength λp_1. A second long period grating 58 has its spacing chosen to remove energy of wavelength λp_2.

Vengsarkar discloses removal of energy of the same wavelength as the pump sources 55 and 56. The Office Action's citation to Vengsarkar fails to disclose attenuation of an output from the optical amplifier through employment of a long period Bragg grating. Simply missing from the Office Action's citation to Vengsarkar is any mention of the long period Bragg grating that is optically coupled with the light source via the first optical splice and the amplification fiber that is optically coupled with the long period Bragg grating via the second optical splice, wherein the long period Bragg grating attenuates the output signal.

So, the Office Action's citation to Vengsarkar fails to satisfy at least one of the limitations recited in applicant's independent claim 1.

Furthermore, the Office Action does not allege that the art of record provides any teaching, suggestion, or incentive for modifying the citation to Vengsarkar to provide the claimed configuration.

Michal (column 4, lines 38-59; FIG. 5) discloses reflection of light emitted from a gain fiber into a WDM coupler:

> The gain fiber 218 absorbs part of the pump light and emits light propagating lengthwise in both directions in the gain fiber. Light emitted in the direction of propagation of the pump light is referred to as forward light. Light emitted by the gain fiber 218 in the direction opposite to the direction of propagation of the pump light is referred to as reverse light. The broadband optical signal source 202 may be formed with either a single-pass or double-pass

> gain fiber 218. When formed using a single-pass gain fiber 218, an angle capillary tube 222 is positioned at the end of the gain fiber 218 to prevent light from being reflected back into the fiber 218. When formed as a double-pass broadband fiber source, angle capillary tube 222 is replaced with a reflector to reflect the forward light back into gain fiber 218. Reflector 222 is preferably formed as a dichroic mirror, but may be a Bragg or long period fiber grating or a straight cleave on the end of the gain fiber 218. The reflector 222 causes the light emitted in the forward direction to be reflected back in the reverse direction, so that both the reverse light and the forward light are directed to the WDM coupler 210. The pump light does not reflect from the reflector 222 when a dichroic mirror is used.

Michal discloses a reflector 222 that reflects the forward light towards the WDM coupler 210 such that both the forward light and reverse light are directed towards the pump light source 206. The Office Action's citation to Michal uses the WDM coupler 210 to prevent backreflection against the pump light source 206 by directing the light towards the fiber optic gyroscope 204. The Office Action's citation to Michal fails to disclose the use of a long period Bragg grating to prevent backreflection against the pump light source 206. Applicant respectfully notes that the configuration disclosed by Michal uses more costly components (i.e. the WDM coupler), requires more splices to optically couple the necessary optical components, and requires additional optical components (i.e. reflector 222). Simply missing from the Office Action's citation to Michal is any mention of the long period Bragg grating that is optically coupled with the light source via the first optical splice and the amplification fiber that is optically coupled with the long period Bragg grating via the second optical splice, wherein the long period Bragg grating attenuates the output signal.

So, the Office Action's citation to Michal fails to satisfy at least one of the limitations recited in applicant's independent claim 1.

The shortcomings of the Office Action's citation to Michal relative to certain elements of the claimed invention have been discussed above. The Office Action proposes a combination of the citation to Michal with a citation to Goldberg. However, the Office Action's citation to Goldberg does not overcome the deficiency of the Office Action's citation to Michal. Applicant respectfully submits that the proposed combination of the Office Action's citation to Michal with the Office Action's citation to Goldberg fails to provide the required approach, assuming, *arguendo*, that the combination of the Office Action's citation to Michal with the Office Action's citation to Goldberg is proper.

Goldberg (paragraph 27) discloses connecting a gain fiber to a pumping device:

> An optical fiber amplifier may be formed by connecting, preferably fusion splicing, a first end of a gain fiber comprising a first cladding layer and a doped core to the narrow diameter portion of the light guiding section of a pumping device as defined above, in order to propagate pump light from the pump light source through the first cladding layer of the light guiding section into the first cladding layer of the gain fiber. Preferably, in this optical fiber amplifier, the gain fiber has a second cladding layer surrounding the first cladding layer, the second cladding layer having a lower refractive index than the that of the first cladding layer. In this way pump light losses are avoided which would inevitably occur if the first cladding were directly surrounded by a fiber jacket that typically has a higher refractive index than the cladding. The number of cladding layers of the gain fiber is not limited to two.

Goldberg discloses fusion splicing of the gain fiber and the pumping device. The Office Action's citation to Goldberg fails to disclose splicing the pumping device with a long period Bragg grating and splicing the long period Bragg grating with the gain fiber such that the long period Bragg grating attenuates an output signal from the gain fiber. Simply missing from the Office Action's citation to Goldberg is any mention of the long period Bragg grating that is optically coupled with the light source via the first optical splice and the amplification fiber that

is optically coupled with the long period Bragg grating via the second optical splice, wherein the long period Bragg grating attenuates the output signal, as recited in applicant's independent claim 1.

So, the Office Action's citation to Goldberg fails to satisfy at least one of the limitations recited in applicant's independent claim 1.

The Office Action's citations to Michal and Goldberg both fail to meet at least one of applicant's claimed features. For example, there is no teaching or suggestion in the Office Action's citations to Michal or Goldberg of the long period Bragg grating that is optically coupled with the light source via the first optical splice and the amplification fiber that is optically coupled with the long period Bragg grating via the second optical splice, wherein the long period Bragg grating attenuates the output signal, as recited in applicant's independent claim 1.

Furthermore, the Office Action does not allege that the art of record provides any teaching, suggestion, or incentive for modifying the citations to Michal and/or Goldberg to provide the claimed configuration.

For all the reasons presented above with reference to claim 1, claims 1 and 20 are believed neither anticipated nor obvious over the art of record. The corresponding dependent claims are believed allowable for the same reasons as independent claims 1 and 20, as well as for their own additional characterizations.

Withdrawal of the §§ 102 and 103 rejections is therefore respectfully requested.

In view of the above amendments and remarks, allowance of all claims pending is respectfully requested. If a telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicant's attorney.

Respectfully submitted,

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